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PACIFIC OCEANIC FISHERY
INVESTIGATIONS

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STRIPED BASS (ROCCUS SAXATILIS)*

Prepared in the Division of Fishery Biology

The striped bass or rockfish is one of the most popular of the food and game fishes of the Atlantic and Pacific coasts.

Geographical Distribution: The natural distribution of the striped bass along the Atlantic coast is from the St. Lawrence River, Canada, to the Tchefuncta River, La. Introduced on the Pacific coast in San Francisco Bay by shipments of small fish from the Atlantic coast in 1879 and again in 1882, the species now occurs from Los Angeles County, Calif., northward to the Columbia River, Wash. The striped bass has probably the most extended geographic range of any American food and game fish. Its ability to exist in fresh, brackish, or salt waters throughout the year and from the cold rivers of eastern Canada to the sub-tropical bayous of Louisiana provides a unique record of successful adaptation to environment.

Abundance and Importance: The striped bass is one of the best and largest of American anadromous fishes. Its meat is firm, flaky, and of excellent flavor. Along the Atlantic coast it supports extensive commercial and recreational fisheries, yielding about 4 million pounds annually to market fishermen and an unknown but possibly equal amount to sports fishermen. The center of the commercial fishery is in the states of Maryland, Virginia, and North Carolina. The sports fishery is also active in the Chesapeake Bay and very popular in more northern regions such as New Jersey, New York, and the New England coast.

On the Pacific coast striped bass are probably more abundant than on the Atlantic. The commercial catch is very small as it is now reserved as a game fish in California. In 1941 in the Sacramento-San Joaquin River Basin, including San Francisco Bay, 111,400 anglers caught 2,035,000 striped bass with an estimated weight of 6,105,000 pounds. The commercial catches of striped bass on the basis of latest printed statistics are listed in Table 1.

Reproduction: The principal spawning and nursery areas along the Atlantic coast are in Chesapeake Bay although some spawning on a relatively less scale occurs in the upper waters of Delaware Bay and the lower region of the Hudson River. Striped bass spawn in fresh or brackish waters in the spring or early summer depending on latitude and temperature. The eggs are semi-buoyant, hatch in 74 hours at temperature of 58 degrees; 12-pound fish are known to yield 1,200,000 eggs. Many females spawn for the first time at 4 years old, and many males are mature at 2 years old.

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*Fishery Memorandum I-24 revised February, 1946, by William C. Neville, aquatic biologist.

Table 1. — Commercial Catch of Striped Bass *

State	Pounds	Value
Massachusetts	75,700	$10,401
Rhode Island	64,000	7,096
Connecticut	7,700	1,384
New York	265,700	59,077
New Jersey	94,700	19,289
Delaware	58,600	9,101
Maryland	2,507,800	254,096
Virginia	777,900	70,598
North Carolina	539,900	59,389
Oregon	55,400	5,540
Total	4,447,400	495,971

* Figures for New England states for year 1940 — for Middle Atlantic states 1942 — for South Atlantic states 1940 — for Pacific coast states 1942.

Data from Division of Commercial Fisheries,
Fish and Wildlife Service.

An observer described some of the breeding habits of the fish to the effect that when a female was in spawning condition the males gathered about her in great numbers. A single female which might weigh from 5 to 50 pounds would have around her 20, 30 or 50 small male fish, all of which weighed less than 2 pounds each, and they seemed to be the only males present. The water was stated to be discolored with blood from the fish "finning" one another while contending for the female.

Migrations: Parts of the important broods migrate from Chesapeake Bay to the more northern fishing regions of the Middle Atlantic and New England coasts. Such migrations from Chesapeake Bay usually begin when the fish are about two years old. It is believed, however, that not more than 10% of the locally spawned stock in Chesapeake Bay migrate to northern coastal regions

but this migrating segment of the population represents 90% or more of the supply available to fishermen in northern states. The other 10% is usually from less important spawning spots in northern states such as New Jersey and New York.

General migration occurs annually each spring and fall. The fish move northward in the spring from wintering areas in Chesapeake Bay, Delaware Bay, Hudson River and other coastal rivers and small bays in New Jersey, Long Island (N.Y.), and even southern New England, to more northerly sections of the coast especially to New England. In the fall beginning about September a return migration starts southward from the northern summer areas. In the fall migration "pods" of bass break off from the main run and winter at numerous spots along the coast from southern New England to New Jersey, but the main part of the run appears to continue south to Chesapeake Bay.

Rate of Growth: Striped bass have a fast rate of growth compared to some fish. Spawned in May or June they attain a growth of 4 to 5 inches by the end of the first year but an average weight of only 1 oz. Increase in weight is rapid, however, for at 2 years the weight is 1/4 pounds; 4 years, 2¼ pounds; 8 years, 12 pounds, etc. Fish 40 pounds or more are often caught by commercial fishermen and to a lesser extent by sports fishermen. The largest striped bass recorded were several taken at Edenton, N. C., each of which weighed 125 pounds. Individuals of 60 or 70 pounds are not uncommon, although the average is probably not over 4 or 5 pounds, and fish weighing 1½ pounds are numerous in the southern markets.

Conservation Problems: Along the Atlantic coast the catch of striped bass has undergone marked changes principally as the result of changes in natural abundance resulting from the variations in the success of spawning and survival of broods. An important recovery of the fishery to record levels of high abundance occurred in 1936 as the result of unusually successful spawning and survival in the summer of 1934. Other large broods have been produced in some subsequent years since 1934 with the result that the abundance of striped bass is now (1946) at a relatively high level within the coastal range of the species from Virginia to Maine.

Although the supply is at a high level of abundance, it is believed that good yields can be continued and greater utilization made of the supply if the various Atlantic coastal states adopt a minimum size limit devised to protect the juvenile striped bass during their early years of rapid growth, thereby contributing to a build-up and maintenance of an adequate reserve stock. The Service has recommended an appropriate minimum size limit of 16" measured from the snout to the fork of the tail. This 16" size limit or its equivalent (18 inches measured to the tip of the tail) has been adopted by several of the Atlantic coastal states and an effort is being made in other states to increase the legal minimum size limit toward the recommended 16" limit. Because the striped bass migrates widely along the coast, such a measure cannot be fully effected until it becomes adopted by all the states that share this resource. Considerable assistance has been rendered by the Atlantic States Marine Fisheries Commission (a compact of states) in securing the support of fishermen and developing legislative action in the various Atlantic coastal states concerned with the problem of conservation of this species.

On the Pacific coast construction projects in the Central Valley of California may change the character of the feeding and spawning grounds of the striped bass through their effect on water flows and salinity. For the protection of the resource, these effects are being investigated, along with the preliminary engineering studies of each project.